IT IS CLAIMED:

1. A method for injecting a sample comprising a plurality of charged components and separating the components by electrophoresis in a microfluidics device,

wherein said microfluidics device includes a separation channel, having an upstream portion terminating in an upstream reservoir and a downstream portion terminating in a downstream reservoir, sample and drain channels intersecting the separation channel between the two channel portions at first and second junctions, respectively, and terminating in sample and drain reservoirs, respectively; and said device further includes electrodes in contact with the fluid in each said reservoir, including an upstream electrode, a downstream electrode, a sample electrode, and a drain electrode;

the method comprising:

a) placing into said separation channel, side channels and drain reservoir a first electrolyte solution;

b) placing into said sample reservoir the sample and a second electrolyte solution;

wherein said first and second electrolyte solutions each comprise an ion having lower mobility in an electric field than any of said charged components, and one or the other of said electrolyte solutions comprises an ion having higher mobility in an electric field than any of said charged components;

c) creating a first voltage gradient between said sample electrode and said drain electrode, such that the charged components move into said separation channel and become stacked within a region of said separation channel; and

d) placing at least one of said sample and drain electrodes in a floating state, and creating a second voltage gradient between said downstream and upstream electrodes, such that the charged components move through the separation channel and separate into discrete bands according to their electrophoretic mobilities.

2. The method of claim 1, wherein, in step (d), said sample and drain electrodes are both in a floating state.

3. The method of claim 1, wherein, in step (d), one of said sample and drain electrodes is in a floating state, and a voltage is applied between the other of said electrodes and the upstream electrode which is in the same direction but of lower potential than that applied between the downstream and upstream electrodes.

4. The method of claim 1, wherein said sample and drain channels intersect said separation channel at directly opposed junctions, to create a cross network.

5. The method of claim 1, wherein said sample and drain channels intersect said separation channel at staggered junctions, to create a double-T network.

6. The method of claim 5, wherein the sample channel is upstream of the drain channel.

7. The method of claim 5, wherein the sample channel is downstream of the drain channel.

8. The method of claim 1, wherein said upstream and downstream electrodes are in a floating state during step (c).

9. The method of claim 1, wherein, during step (c), a voltage gradient is created between said upstream and drain reservoirs, and between said downstream and drain reservoirs, in the same direction than that created between said sample and drain reservoirs.

10. The method of claim 9, wherein, during step (c), a voltage is applied to said drain electrode, and said sample, upstream and downstream electrodes are grounded.

11. The method of claim 1, wherein the charged components are selected from the group consisting of nucleic acids, proteins, polypeptides, polysaccharides, and synthetic polymers.

12. The method of claim 11, wherein said charged components comprise nucleic acids.

13. The method of claim 1, wherein the charged components comprise labeled molecules having distinct and characterized electrophoretic mobilities, said molecules having been cleaved from molecular species with biological or chemical recognition properties in the course of a multiplexed chemical or biochemical assay.

14. The method of claim 1, wherein the charged components are negatively charged, and said higher mobility ion is selected from the group consisting of chloride, bromide, fluoride, and nitrate.

15. The method of claim 14, wherein the higher mobility ion is chloride.

16. The method of claim 1, wherein the charged components are negatively charged, and the low mobility ion is selected from the group consisting of HEPES (2-[4-(2-hydroxyethyl)-1-piperazinyl] ethanesulfonic acid), TAPS (3-[tris(hydroxymethyl) methylamino]-1-propanesulfonic acid), MOPS (3-(4-morpholinyl)-1-propanesulfonic acid), CHES (2-(cyclohexylamino) ethanesulfonic acid), MES (2-(4-morpholinyl) ethanesulfonic acid), and imidazole.

17. The method of claim 1, wherein the concentration of the low mobility ion in said solutions is in the range of about 1 to 500 mM.

18. The method of claim 17, wherein the concentration of the low mobility ion is in the range of about 1 to 50 mM.

19. The method of claim 1, wherein the concentration of the charged components in the sample is in the range of about 0.1 pM to 100 μM.

20. The method of claim 19, wherein the concentration of the charged components in the sample is in the range of about 0.1 pM to 1 μM.

21. The method of claim 1, wherein the concentration of the high mobility ion is in the range of about 1 – 100 mM.

22. The method of claim 21, wherein the concentration of the high mobility ion is in the range of about 20 – 35 mM.

23. The method of claim 1, wherein only the first electrolyte solution comprises said high mobility ion.

24. The method of claim 1, wherein only the second electrolyte solution comprises said high mobility ion.